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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:

Applicant	:	Gasvin D. Hartigan et al.
Serial No.	:	09/827,947
Filed	:	April 6, 2001
For	:	METHOD AND SYSTEM FOR LIQUEFACTION MONITORING
Examiner	:	Jay L. Politzer
Art Unit	:	2856
Attorney Docket No.	:	M00A214

I HEREBY CERTIFY THAT THIS CORRESPONDENCE IS BEING DEPOSITED WITH THE UNITED STATES POSTAL SERVICE AS FIRST CLASS MAIL IN AN ENVELOPE ADDRESSED TO: COMMISSIONER FOR PATENTS, P.O. BOX 1450, ALEXANDRIA, VIRGINIA 22313-1450
ON December 2, 2003
NAME Jill S. Garretson
SIGNATURE Jill S. Garretson

Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

December 2, 2003

RESPONSE

Dear Sir:

This is in response to the Office Action of September 2, 2003.

Claim 15 has been rejected under 35 USC Section 112 on the ground that it is not clear how the sensor, the tolerance-level-determination engine and the results-reporting engine are connected to the pipe system. The rejection is hereby traversed and reconsideration is respectfully requested.

As clearly shown in Figure 1, the various engines and sensors are shown as data collection unit 28 which comprises the liquefaction monitoring unit 100 (see page 8, line 15). The data collector 28 has a housing which contains the operable engines and sensors. As clearly shown at the right side of the housing there is an operable connection to the piping 26. Thus, claim 15 is merely provided to indicate that in accordance with an optional feature of the invention, the operating units can be enclosed within a protective housing while obviously being operatively connected to the piping 26 which contains the gas to be monitored. One of ordinary skill in the art looking at Figure 1 and the accompanying description in the specification would readily understand the metes and bounds of the invention encompassed by claim 15. It is therefore submitted that claim 15 meets the requirements of 35 USC Section 112 and withdrawal of the rejection of the same is deemed proper and is respectfully requested.

All of the claims of the application (claims 1-27) have been rejected as anticipated or obvious over Inoue et al., U.S. Patent No. 6,499,308 (the equivalent of JP2000039220). The Office Action refers to column 15, lines 45-49 and column 28, lines 21-56 describing a control means including the operating means 64, 65 and W1 and W2. The rejection is hereby traversed and reconsideration is respectfully requested.

The present invention is directed to a method and system for monitoring a liquefaction status for a gas based on pressure and temperature information about

the gas. It is important to note that the system in question concerns a gas piping system containing only a gas product. Indeed, the purpose of monitoring the liquefaction status of the gas is to alert the system operator of any condition in which the gas could conceivably turn into a liquid. It is the entire purpose of the system to ensure that only gas flows through the gas piping system.

This is not the case with the Inoue reference. The reference system is discussed beginning at column 7 and the major components thereof are described in connection with Figures 1 and 2. As explained beginning at column 8, line 29 the compressor compresses a gas refrigerant which flows into the outdoor heat exchanger 4 via a valve 3 through a gas pipe 12. In the outdoor heat exchanger 4, heat is exchanged between the refrigerant and outdoor air and the refrigerant is condensed and liquefied and proceeds via conduit 13. The liquid refrigerant then passes through a flow rate control valve which lowers the pressure to provide a two phase refrigerant containing both gas and liquid. The refrigerant in this condition then enters the second heat exchanger 6 where it is evaporated into a gas in a heat exchange operation and leaves the heat exchanger 6 as a gas to enter an accumulator and thereafter into the compressor to begin the cycle anew (i.e. transformation from a gas to a compressed gas to a liquid to a gas-liquid combined stream and finally to a gas).

Thus, the system provided in the Inoue reference is not a gas only system which monitors the liquefaction status of the gas. It is a system which purposely turns gas into liquid and then back again (see column 7, lines 1-13 and column 8,

lines 29-47). The teaching provided by the Inoue reference as it pertains to a gas-liquid-gas system is to provide a control system as described in Figure 2 to control the refrigeration cycle in a manner which reduces energy consumption. The control means 15 is comprised of a means 61 for controlling the operating capacity of the compressor such as by altering the "running frequency" thereof. The control system also includes a first operation means 62 for controlling the outdoor blower 10 to thereby control the heat exchanger capacity for the heat exchanger 4. A second operation means 63 is provided to control the blower 11 and thereby control the heat exchange capacity of the heat exchanger 6. Additional operating means 64 and 65 are provided to represent a distance between a target and a running state and a means for controlling energy consumption. The purpose of these control operations is, for example, to bring the difference in temperature between an inlet temperature and an outlet temperature of a heat exchanging fluid in one of the heat exchangers on a user side closer to a target temperature when the difference between the running condition on a high pressure side or low pressure side and the target is reduced.

However, all of these control features are directed to a system that relies on the conversion of a gas to a liquid and back again to a gas in order to obtain the heat exchange capability necessary for operating the heating-cooling system described in the reference. There is no teaching or suggestion in the reference of the invention claimed in the present application. In particular, there is no disclosure or suggestion of a system for liquefaction monitoring of a gas in a gas piping system and there is no disclosure or suggestion of a means for determining a liquefaction status of a gas

which is capable therefore of providing a warning if the gas is headed toward conversion to a liquid (see page 5, lines 17-26 of the specification). Furthermore, there is no means disclosed or suggested of a gas only piping system in which liquefaction status is based on at least two parameters of the gas along with means for providing at least one reference data sets of the gas and for determining and reporting the liquefaction status of the gas so that the conversion of the gas to liquid is avoided.

In view of the foregoing, Applicants submit that the present application is in condition for allowance and early passage to issue is therefore deemed proper and is respectfully requested.

It is believed that no fee is due in connection with this matter. However, if any fee is due, it should be charged to Deposit Account No. 23-0510.

Respectfully submitted,

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